

FEB 16 2007

BEST AVAILABLE COPY

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 10015382-4

Inventor(s): Buswell et al.

Confirmation No.: 3876

Application No.: 10/642,872

Examiner: Anita Karen Alanko

Filing Date: 08/18/2003

Group Art Unit: 1765

Title: SLOTTED SUBSTRATE AND METHOD OF MAKING

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL LETTER FOR RESPONSE/AMENDMENT

Transmitted herewith is/are the following in the above-identified application:

- ☒ Response/Amendment
☐ New fee as calculated below
☒ No additional fee
☒ Other Resp. to Notice of Non-Compliant Appeal Brief and Sub. of Amended Appeal Brief

- ☐ Petition to extend time to respond
☐ Supplemental Declaration

Fee\$

CLAIMS AS AMENDED BY OTHER THAN A SMALL ENTITY						
(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT	(3) NUMBER EXTRA	(4) HIGHEST NUMBER PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	(6) RATE	(7) ADDITIONAL FEES
TOTAL CLAIMS		MINUS		= 0	X \$50	\$ 0
INDEP. CLAIMS		MINUS		= 0	X \$200	\$ 0
<input type="checkbox"/> FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM					+ \$360	\$ 0
EXTENSION FEE	<input type="checkbox"/> 1st Month \$120	<input type="checkbox"/> 2nd Month \$450	<input type="checkbox"/> 3rd Month \$1020	<input type="checkbox"/> 4th Month \$1590		\$ 0
OTHER FEES						\$
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT						\$ 0

Charge \$ 0 to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

☐ A duplicate copy of this transmittal letter is enclosed.

I hereby certify that this paper is being
transmitted to the Patent and Trademark Office
facsimile number (571) 273-8300.
Date of facsimile: 02/16/2007

Typed Name: Doreen Zabinski

Signature: Doreen Zabinski

Respectfully submitted,

Buswell et al.

By Petar Kraguljac

Petar Kraguljac

Attorney/Agent for Applicant(s)

Reg No. : 38,520

Date : 02/16/2007

Telephone : (216) 348-5843

Rev 10/06a(TransAmndFax)

RECEIVED
CENTRAL FAX CENTER

FEB 16 2007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	Examiner: Anita Karen Alanko
Buswell et al.)	
Serial No.: 10/642,872)	Art Unit: 1765
Filed: August 18, 2003)	
For: SLOTTED SUBSTRATE AND METHOD OF MAKING)	
Date of Last Office Action:)	Attorney Docket No.:
June 13, 2006)	10015382-4
Date of Notice of Non-Compliance)	
January 18, 2007)	

February 16, 2007

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF and
SUBMISSION OF AMENDED APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

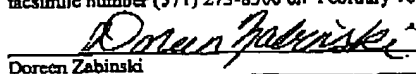
Dear Sir:

This correspondence is in response to the Notice of Non-Compliant Appeal Brief mailed on January 18, 2007. An Amended Appeal Brief is attached hereto, which complies will all requirements of 37 CFR 41.37.

CERTIFICATE OF FACSIMILE

Date of Deposit: February 16, 2007

I hereby certify that these papers are being transmitted to The United States Patent and Trademark Office facsimile number (571) 273-8300 on February 16, 2007.


Doreen Zabinski

Docket No. 10015382-4

RECEIVED
CENTRAL FAX CENTER

FEB 16 2007

Remarks

The attached Amended Appeal Brief has revised Section 6 to remove the headings identified by the Examiner (e.g. previous headings II and V). These sections are now sub-headings under the Argument Section 7, sub-heading II.

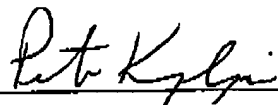
Section 8 (Claims Appendix) now includes numeral "8."

Sections 9 and 10 are now on separate pages.

The Examiner's note regarding Figure 5a in section 5 is a matter of claim interpretation and as such does not relate to the format requirements of 37 CFR 41.37. The Examiner's note appears to be a topic for the Examiner's Answer. Section 5 complies with all requirements of 37 CFR 41.37 and thus has not been amended.

Respectfully submitted,

2-16-2007
Date


Petar Kraguljac (Reg. No. 38,520)
(216) 348-5843
McDonald Hopkins Co., LPA
600 Superior Avenue, E.
Suite 2100
Cleveland, OH 44114

Docket No. 10015382-4

RECEIVED
CENTRAL FAX CENTER**FEB 16 2007****PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:)	Examiner: Anita Karen Alanko
Buswell et al.)	
Serial No.: 10/642,872)	Art Unit: 1765
Filed: August 18, 2003)	
For: SLOTTED SUBSTRATE AND METHOD OF MAKING)	
Date of Last Office Action:)	Attorney Docket No.:
June 13, 2006)	10015382-4
Date of Notice of Non-Compliance)	
January 18, 2007)	

February 16, 2007

AMENDED APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Amended Appeal Brief is being submitted in response to the Notice of Non-Compliant Appeal Brief mailed on January 18, 2007. The Amended Appeal Brief complies will all requirements of 37 CFR 41.37.

Docket No. 10015382-4

1. Real Party in Interest:

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

Docket No. 10015382-4

2. Related Appeals and Interferences

There are no other prior and/or pending appeals, interferences, or judicial proceedings that are related to, directly affect, or that will be directly affected by or have a bearing on the Board's decision.

Docket No. 10015382-4

3. Status of Claims

Claims 1-8, 10-12, 14-15, 17-25 are pending in the application.

Claims 1-8, 10-12, 14-15, and 17-25 stand rejected. All rejections are appealed.

Claims 9, 13, and 16 were cancelled.

Docket No. 10015382-4

4. Status of Amendments

No Amendments were filed subsequent to the Final Office Action.

Docket No. 10015382-4

5. Summary of Claimed Subject Matter

Claims 1, 10, 14, 18 and 20 are in independent form. In general, the claimed subject matter is directed to methods of forming a slotted substrate for fluid ejection devices like ink jet print heads. For example, Figures 5 and 5a illustrate one embodiment of a slotted substrate with bowl-shaped terminal regions that can be formed by performing the claimed methods. The bowl-shaped terminal region at the ends of a slot help to reduce stress concentrations (see specification, paragraph [0035], lines 1-2, and paragraph [0038]).

Figure 5a (a cut-out view of Figure 5) is reproduced here for convenience.

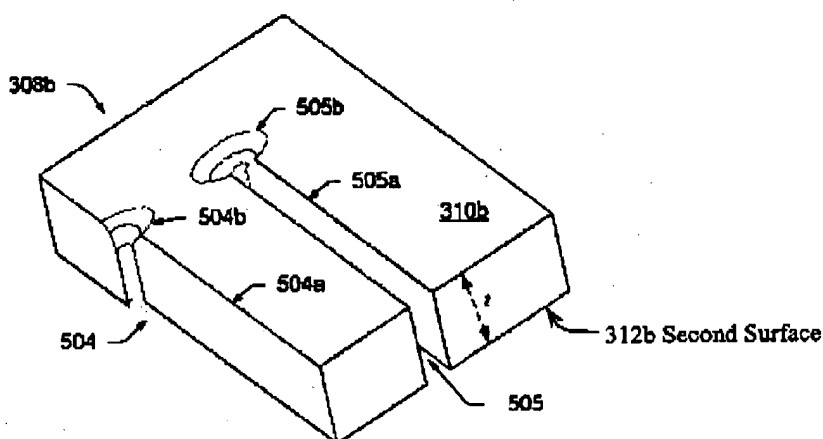


Fig. 5a

- 308b = Substrate
- 310b = First surface of substrate
- 312b = Second surface of substrate
- 505 = Slot
- 505a = Central region of slot 505
- 505b = Bowl-shaped terminal region of slot 505
- 504b = Bowl-shaped terminal region of slot 504 (partially cut away)

Docket No. 10015382-4

Independent Claim 1

Claim 1 is directed to a method of forming a slotted substrate and recites forming a slot into a substrate that extends between a first substrate surface and a generally opposing second substrate surface. For example, Figure 5a shows a slot 505 formed between a first surface 310b and second surface 312b (labeled in Fig. 5b). Claim 1 further recites, the slot extending along a long axis that extends generally parallel the first surface and being defined, at least in part, by a pair of sidewalls which extend generally parallel to the long axis. In Figure 5, the long axis is along the dotted line, which is along the length of slot 504 (specification, paragraph [0039, lines 1-2]). Slot 505 is shown with side walls between the substrate surfaces 310b and 312b that run parallel to the long axis.

Claim 1 also recites forming at least one bowl-shape into the substrate so that the long axis passes therethrough, the bowl shape being connected to the pair of sidewalls of the slot and defining, at least in part, a terminal region at an end of the slot. Figure 5 shows bowl-shaped terminal regions 505b and 505c formed at the end of slot 505 (see specification, paragraphs [0036-0037]).

Dependent Claim 2

Dependent claim 2 recites forming at least one bowl shape into the first surface of the substrate, and wherein the at least one bowl shape has a width at the first surface measured generally orthogonal to the long axis that is greater than a width at the first surface measured generally orthogonal to the long axis between the pair of sidewalls. As seen in Figure 5a, the bowl-shaped terminal region 505b is formed having a width at the first surface 310b that is greater than the width between the pair of sidewalls of slot 505 shown at the central region 505a. The sidewalls of the slot 505 extend from the first surface 310a to the second surface 312b, but are not labeled. See also Figure 5f of the present application.

Docket No. 10015382-4

Independent Claim 10

Claim 10 recites forming a fluid-feed slot between a first substrate surface and a second generally opposing substrate surface, the fluid-feed slot extending along a long axis which extends generally parallel to the first surface. This language is similar to that of claim 1 and can be supported by for example Figure 5, Figure 5a, and paragraphs [0035-0038] of the specification. As seen in Figure 5 or 5a, the substrate 308b includes a formed fluid slot 505, a first substrate surface 310b, second surface 312b, and where the slot 505 extends along a long axis (e.g. dotted line through slot 504 in Figure 5).

Claim 10 further recites that the slot is formed having a central region (e.g. 505a) and at least one terminal region (e.g. 505b) arranged along the long axis wherein the terminal region is wider at the first surface than the central region as measured generally orthogonally to the long axis. As seen in Figure 5 or 5a, the terminal region 505b is wider at the first surface 310b than the central region 505a of the slot 505 (see paragraph [0038 - lines 6-10]).

Claim 10 further recites blending the slot at the first surface, at least in part, to decrease stress concentrations on substrate material proximate the first surface. See Figure 5a, blended terminal regions 505b and paragraph [0037, lines 7-11].

Independent Claim 14

Claim 14 recites a method of forming a fluid-feed slot similar to claim 10. However, claim 14 recites that the fluid-feed slot is formed having a cross-section at the first surface and taken generally parallel the first surface comprising a narrower central region positioned between two wider terminal regions. This is supported by for example Figure 5 where central region 505a of slot 505 is formed narrower than and between two wider terminal regions 505b and 505c. See also Figure 5f and paragraph [0046] where diameter d of a terminal region is greater than width w of central region 503a.

Docket No. 10015382-4

Independent Claim 18

Claim 18 recites a method of forming a slot into a substrate where the act of forming a slot comprises forming a slot extending along a long axis that extends generally parallel to the first surface and having a central region and at least one terminal region arranged along the long axis, the at least one terminal region being formed at an end of the slot and having a bowl-shape. These features are also supported by Figure 5, Figure 5a, and paragraphs [0035-0038] of the specification. For example, see the bowl-shaped terminal region 505b formed at the end of slot 505.

Independent Claim 20

Claim 20 recites a method that includes forming two terminal regions of the slot into the first surface generally contiguous with and interposed by the central region, each of the two terminal regions having a width at the first surface taken generally orthogonal to a long axis of the slot that is greater than a width of the central region at the first surface taken generally orthogonal to the long axis of the slot.

As one example, the present application in Figure 5 shows a slot 503 with a central portion 503a and two terminal regions 503b and 503c formed into the first surface 310b. The terminal regions 503b and 503c have a width that is greater than the central region 503a of the slot 503 at the first surface 310b. See also paragraphs [0035 - 0038]. Figure 5f and paragraph [0046] also describe diameter d of a terminal region 503b is greater than width w of central region 503a. Other embodiments are also described with reference to the remaining figures.

Docket No. 10015382-4

6. Grounds of Rejection to be Reviewed on Appeal

The following grounds of rejection are to be reviewed on appeal:

- I. Whether claims 1-3, 6-7 and 10-12, 14, 17-25 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Baughman et al. (U.S. Patent No. 5,441,593).
- II. Whether claims 1-4, 6-7, 10-12, 14-18, 20-25 are unpatentable under 35 U.S.C. §102(b) as being clearly anticipated by Soik et al. (U.S. Patent No. 6,745,469 B1).
- III. Whether claims 5 and 8 are unpatentable under 35 U.S.C. §103(a) over Soik et al. (U.S. Patent No. 6,745,469 B1).

Docket No. 10015382-4

7. **Argument**

I. **Whether Claims 1-3, 6-7 and 10-12, 14, 17-25 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Baughman et al. (U.S. Patent No. 5,441,593)**

Before the claims are addressed, Appellant discusses the incorrect interpretation of the claim language and the Baughman reference. The Final Office Action states that the Examiner has broadly interpreted the claimed limitations of "terminal regions" and "ends of the slot" to read on the central portion of the slot 18a in Baughman, which likewise requires a broad interpretation of the Baughman teachings. The Final Office Action states on page 2, "...the end of the slot is shown as that at the upper end of the slot intersecting the top surface". Appellant respectfully submits that the claims and Baughman have been improperly interpreted and thus Baughman fails to support a proper rejection.

Looking to Figure 1 of Baughman, the upper end of the slot 18a at the top surface is at layer 26. The Examiner believes this is the "terminal region" and "end of the slot". However as seen in Figure 1, this region is constructed so that ink flows in nearly every direction. The ink flows into ink feed channel 14 along arrow "A" into chamber 15. The ink continues to flow upward to nozzle 20. The ink flows similarly on the other side of the slot 18a as shown in Figures 2b and 3. The ink also flows along the slot 18a to the left and right from the view of Figure 1. Looking at Figures 4D, 5D or 6D, the cross-section view in each figure shows the ink paths that lead upward and away from the slot 18a toward nozzles 20. Thus at the purported "terminal region" as asserted by the Examiner, ink flows in nearly every direction.

There is nothing in the teachings of Baughman that would lead one of ordinary skill in the art to believe that the identified central region is a formed "terminal region" or is formed at "the end of the slot". It is clear that this is not a terminal region and is not the end of the slot as defined by the present claims. Thus, the interpretation of Baughman is incorrect. Therefore, Baughman fails to disclose forming a slot and forming terminal regions.

Docket No. 10015382-4

in the slot as recited in the claims (as addressed below). Thus, each and every limitation as defined in each independent claim is not taught and a proper §102 rejection has not been established. The rejection cannot stand and must be withdrawn.

Furthermore, the interpretation used in the Office Action is not consistent with the claim language as a whole, is not a meaning that one of ordinary skill in the art would construe, and is not reasonable based on MPEP 2111.

MPEP 2111 instructs that claims must be given their "broadest reasonable interpretation" consistent with the specification, and not "broadly interpreted" as used in the Office Action. MPEP 2111 states:

"During patent examination, the pending claims must be "given *>their< broadest reasonable interpretation consistent with the specification." (MPEP 2111, first paragraph).

...The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. In re Cortright, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999) (MPEP 2111, second paragraph).

One of ordinary skill would not construe forming "terminal regions" and "the end of the slot" to mean "at the central region of the slot". The claim language does not lead to this meaning and the meaning is not consistent with the specification. For example, Figures 5 and 5a of the present specification and their corresponding paragraphs described that the terminal regions are at the ends of a slot. Furthermore, in view of a full understanding of Baughman as described above, the Office Action's reading of Baughman and the proposed interpretation is incorrect and improper. As such, the claim rejections are based on a flawed reasoning and are not supported by the actual teachings of Baughman.

To address the Examiner's statement that Appellant is arguing limitations from Figure 5 (see Final Office Action, page 6), Appellant notes that the references to the present specification Figure 5 showing terminal regions 503b and 503c, 504b and 504c, 505b and

Docket No. 10015382-4

505c, which are formed at the ends of their slots, are used to show examples of what is consistent with the specification. Interpreting the claims to be "consistent with the specification" (as MPEP 2111 requires) supports what is a "reasonable interpretation" as would be understood by one of ordinary skill.

Thus, the Examiner's interpretation is not the "broadest reasonable interpretation" according to MPEP 2111 and is not consistent with the interpretation that those skilled in the art would reach. Likewise with respect to the interpretation of Baughman, what the Examiner claims is a terminal region is not terminal at all and is not at the end of a slot.

Therefore, for these reasons and for the reasons set forth below, Baughman fails to teach each and every limitation of the claims and fails to support a proper §102 rejection. The rejection cannot stand and should be reversed.

The claims will now be discussed individually.

Independent Claim 20

Claim 20 recites:

"forming two terminal regions of the slot into the first surface generally contiguous with and interposed by the central region, each of the two terminal regions having a width at the first surface taken generally orthogonal to a long axis of the slot that is greater than a width of the central region at the first surface taken generally orthogonal to the long axis of the slot."

To assist in visualizing an example of what can be formed by the claimed method, attention is directed to Figure 5 of the present application, which shows a slot 503 with a central portion 503a and two terminal regions 503b and 503c formed into the first surface 310b. The terminal regions 503b and 503c have a width that is greater than the central region 503a of the slot 503 at the first surface 310b.

Appellant respectfully submits that Baughman fails to disclose or illustrate terminal regions of its slot 18, and the fails to teach forming terminal regions of its slot 18. Therefore,

Docket No. 10015382-4

Baughman fails to support the §102 rejection and the rejection cannot stand. In particular, all figures in Baughman illustrate a cut-out portion of the slot 18 and a slot extension region 18a. As recited in claim 20, terminal regions formed in a first surface would be formed at the ends of the slot region 18a but as clearly seen in Baughman, the ends of the slot region 18a are not illustrated. Figures 4-6 show a cross-section of the central portion of the slot, not the ends. Thus, the formed terminal regions as recited in claim 20 are not disclosed by Baughman.

The Office Action cites Baughman Figures 5C and 6C and identifies sidewalls of slot 18a and sidewalls 18'. Appellant submits that sidewalls 18' are internal to the substrate and thus do not meet the claimed limitation of "a width at the first surface". If the sidewalls of slot 18a are deemed to be at the first surface of the substrate, then sidewalls 18' are clearly not "at the first surface." As such, Baughman fails to disclose forming two terminal regions as claimed and fails to disclose the terminal regions having a width at the first surface that is greater than a width of the central region of the slot at the first surface as recited in claim 20.

Therefore, since each and every limitation of claim 20 is not taught by Baughman, Baughman fails to establish a proper §102 rejection and the rejection should be reversed. Claim 20 is thus in condition for allowance. Accordingly, dependent claims 21-25 also patentably distinguish over the references and are in condition for allowance.

Independent Claim 1

Claim 1 recites forming at least one bowl-shape into the substrate so that the long axis passes therethrough, the bowl shape being connected to the pair of sidewalls of the slot and defining, at least in part, a terminal region at an end of the slot.

Based on the explanations above, Baughman fails to illustrate or discuss any terminal regions of its slot 18. Accordingly, Baughman fails to disclose forming terminal regions at the end of its slot 18, and thus fails to disclose forming a bowl shape terminal region. The central portions from Baughman Figure 1 as cited by the Office Action are not terminal regions at the end of the slot. As explained above, one of ordinary skill in the art would not

Docket No. 10015382-4

interpret the central portion of the slot from Baughman as a terminal region and thus Baughman fails to teach the claimed limitations. Therefore, Baughman fails to support the §102 rejection and the rejection should be reversed. Baughman does not discuss or illustrate forming regions at the ends of the slot 18 and thus does not teach forming a bowl-shape that defines a terminal region at an end of the slot as recited in claim 1.

Since claim 1 recites features not taught or suggested by Baughman, claim 1 patentably distinguishes over the reference and the rejection should be reversed. Accordingly, dependent claims 2-8 also patentably distinguish over Baughman and are in condition for allowance.

Dependent Claim 2

Dependent claim 2 recites forming at least one bowl shape into the first surface of the substrate, and wherein the at least one bowl shape has a width at the first surface measured generally orthogonal to the long axis that is greater than a width at the first surface measured generally orthogonal to the long axis between the pair of sidewalls. Neither Baughman nor Soik show the claimed limitation of forming a bowl shape having "a width at the first surface...greater than a width...of sidewalls". As described with reference to claim 20 above, the references show sidewalls that are internal within the substrate and the formed features are not at the first surface. Thus, the rejection is not supported.

Accordingly, dependent claim 2 distinguishes over Baughman and is in condition for allowance for this additional reason.

Independent Claim 10

Claim 10 recites forming a fluid-feed slot where the terminal region is wider at the first surface than the central region. As explained above, Baughman fails to teach forming the claimed terminal region at the first surface that is wider than the central region of the slot.

Docket No. 10015382-4

Therefore, Baughman fails to teach or suggest the recited limitations of claim 10 and fails to support the §102 rejection. Thus, the rejection must be withdrawn. For these reasons, claim 10 patentably distinguishes over Baughman and is in condition for allowance.

Accordingly, dependent claims 11-12 also patentably distinguish over Baughman and are in condition for allowance.

Independent Claim 14

Claim 14 recites forming a fluid-feed slot where the fluid-feed slot having a cross-section at the first surface and taken generally parallel the first surface comprising a narrower central region positioned between two wider terminal regions. As explained above, Baughman fails to teach or suggest forming the claimed terminal region at the first surface. Baughman fails to illustrate or discuss terminal regions of the slot. Furthermore in Baughman, the side walls of the slot and the alleged terminal region cited by the Office Action are not both at the first surface.

Therefore, Baughman fails to teach or suggest the recited limitations of claim 14 and fails to support the §102 rejection. Thus, the rejection must be withdrawn. For these reasons, claim 14 patentably distinguishes over Baughman and is in condition for allowance.

Accordingly, dependent claim 15 also patentably distinguishes over Baughman and is in condition for allowance.

Independent Claim 18

Claim 18 recites forming a slot having a central region and at least one terminal region, the at least one terminal region being formed at an end of the slot and having a bowl-shape. In view of the previous explanation, Baughman fails to discuss and does not illustrate "ends" of the slot 18a. Thus, Baughman fails to teach or suggest forming the claimed terminal region at an end of the slot.

Docket No. 10015382-4

Therefore, both Baughman fails to teach or suggest the recited limitations of claim 18 and fails to support the §102 rejection. Thus, the rejection must be reversed. For these reasons, claim 18 patentably distinguishes over Baughman and is in condition for allowance.

Accordingly, dependent claim 17 and 19 also patentably distinguish over Baughman and are in condition for allowance.

II. Whether Claims 1-4, 6-7, 10-12, 14-18, 20-25: 35 U.S.C. §102(b) are unpatentable as being anticipated by Soik et al. (U.S. Patent No. 6,745,469 B1)

Independent Claim 20

Looking to the Soik patent, Soik also fails to teach or suggest the claimed limitations of forming two terminal regions at the first surface that have a width greater than a width of the central region of the slot at the first surface as recited in claim 20. Additionally, Appellant submits that Soik is non-analogous art and this is discussed in the next section. The Final Office Action cites Figure 21 of Soik and contour cut 310, back groove 308, and end wall 400. However, contour cut 310 is not formed as a terminal region as claimed. Furthermore, back groove 308 and end wall 400 are not formed "at the first surface" as recited in claim 20. The claimed first surface represents the relationship between the terminal regions and the slot central region and how they are formed. Instead, Soik in Figures 6 and 11 shows a surface-view illustration that is a better representation. As illustrated, the ends of groove 208 (fig. 6) or groove 308 (fig. 11) do not have formed terminal regions that are wider than a central region.

Therefore, Soik fails to teach the recited limitations of claim 20 and fails to support the §102 rejection. Thus, the rejection cannot stand and should be reversed. For these additional reasons, claim 20 patentably distinguishes over Soik and is in condition for allowance.

Docket No. 10015382-4

Accordingly, dependent claims 21-25 also patentably distinguish over the references and are in condition for allowance.

Independent Claim 1

Based on the explanations of Soik, Soik fails to teach or suggest forming a bowl-shape that defines a terminal region at an end of the slot as recited in claim 1. Thus, Soik fails to support a proper §102 rejection and the rejection should be withdrawn. Claim 1 should now be in condition for allowance.

Independent Claim 10

Claim 10 recites forming a fluid-feed slot where the terminal region is wider at the first surface than the central region. As explained above, Soik fails to teach forming the claimed terminal region at the first surface that is wider than the central region of the slot. The formation of the ends of groove 208 (Soik, fig. 6) or groove 308 (Soik, fig. 11) do not have formed terminal regions that are wider than a central region at the first surface.

Therefore, Soik fails to teach or suggest the recited limitations of claim 10 and fails to support the §102 rejection. Thus, the rejection must be withdrawn. For these reasons, claim 10 patentably distinguishes over Soik and is in condition for allowance.

Accordingly, dependent claims 11-12 also patentably distinguish over Soik and are in condition for allowance.

Independent Claim 14

Claim 14 recites forming a fluid-feed slot where the fluid-feed slot having a cross-section at the first surface and taken generally parallel the first surface comprising a narrower central region positioned between two wider terminal regions. Based on the explanation of Soik above, Soik fails to teach or suggest forming the claimed terminal region at the first surface. Instead, Soik illustrates that the groove 208 (fig. 6) or groove 308 (fig. 11) do not have formed terminal regions that are wider than a central region at the first surface. Soik

Docket No. 10015382-4

shows varying dimensions internally but the claimed limitations are formed at the surface. The side walls of the slot and the alleged terminal region cited by the Office Action are not both at the first surface.

Therefore, Soiks fail to teach or suggest each and every limitation of claim 14 and fails to support the §102 rejection. Thus, the rejection must be withdrawn. For these reasons, claim 14 patentably distinguishes over Soik and is in condition for allowance.

Accordingly, dependent claim 15 also patentably distinguishes over Soik and is in condition for allowance.

Independent Claim 18

Claim 18 recites forming a slot having a central region and at least one terminal region, the at least one terminal region being formed at an end of the slot and having a bowl-shape. As explained above, Soik fails to teach forming the claimed terminal region at an end of the slot. Soik illustrates ends of its grooves but fails to teach or suggest a bowl-shaped terminal region as claimed (see Soik, Figure 6)

Therefore, Soik fails to teach the recited limitations of claim 18 and fails to support the §102 rejection. Thus, the rejection cannot stand and should be reversed. For these reasons, claim 18 patentably distinguishes over Soik and is in condition for allowance.

Accordingly, dependent claim 17 and 19 also patentably distinguish over the references and are in condition for allowance.

Docket No. 10015382-4

Whether Soik U.S. Patent No. 6,745,469 is Non-Analogous Art

MPEP 2141.01(a) "Analogous and Non Analogous Art", section I states:

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

Soik is non-analogous art because its field of endeavor relates to a papermaking process and screens for filtering a wood pulp slurry (see Abstract, or Field of the Invention column 1, lines 13-18, or Summary of Invention column 3, lines 60). Applicant's field of endeavor is forming semiconductor substrates for inkjet print heads. Furthermore, the problems associated with the papermaking process and pulp slurry are not reasonably pertinent to semiconductor substrate fabrication or inkjet systems that involve highly accurate and precise delivery of drops of ink. One of ordinary skill in the art would not look to and have no motivation to look to the papermaking process art of Soik. Soik is thus non-analogous art and should be removed as a reference.

Whether the level of ordinary skill in the art has been properly ascertained under MPEP §2141.03

MPEP §2141.03 requires that Office Actions ascertain and describe the level of the hypothetical person of ordinary skill in the art so that objectivity can be maintained. Here the Office Actions neither ascertained nor reported on the level of ordinary skill in the art. Thus, all the rejections are improper and should be reversed.

The MPEP requires that the Office Action ascertain and describe the level of ordinary skill so that objectivity can be maintained. MPEP §2141.03 reads:

The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry. Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir.

Docket No. 10015382-4

1991). The examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge, a layman, those skilled in remote arts, or to geniuses in the art at hand. *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984).

Here the Office Action neither ascertains nor reports on the level of ordinary skill in the art. This is especially important in view of the applied reference of Soik, which relates to a papermaking process and wood slurries. Appellant believes Soik is non-analogous art and one of ordinary skill would not be motivated to look to Soik as a relevant reference. Since the Examiner maintained Soik as analogous art, then the level of ordinary skill in the art should have been clearly ascertained. The skill level has not been ascertained. For this additional reason, the rejections are improper and should be withdrawn.

III. Whether claims 5 and 8 are unpatentable under 35 U.S.C. §103(a) over Soik et al.
(U.S. Patent No. 6,745,469 B1)

Claims 5 and 8 depend from independent claim 1. Since claim 1 has been shown to patentably distinguish over Soik, the dependent claims also patentably distinguish over Soik. Thus, the rejection is moot. Furthermore, Soik has been shown to be non-analogous art and therefore cannot be used to form a prima facie obviousness rejection. For this additional reason, the rejection of claims 5 and 8 cannot stand and should be reversed.

Docket No. 10015382-4

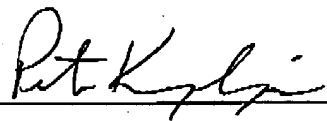
Conclusion

For the reasons set forth above, prima facie §102 and §103 rejections have not been established for any claim. Thus, all rejections are improper and should be reversed. Accordingly, claims 1-8, 10-12, 14-15, and 17-25 patentably and unobviously distinguish over the references of record and are now in condition for allowance. An early allowance of all claims is earnestly solicited.

Respectfully submitted,

2-16-2007

Date



Petar Kraguljac (Reg. No. 38,520)

(216) 348-5843

McDonald Hopkins Co., LPA
600 Superior Avenue, E.
Suite 2100
Cleveland, OH 44114

Docket No. 10015382-4

8. Claims Appendix

1. A method comprising:

forming a slot into a substrate and extending between a first substrate surface and a generally opposing second substrate surface, the slot extending along a long axis that extends generally parallel the first surface and being defined, at least in part, by a pair of sidewalls which extend generally parallel to the long axis; and,

forming at least one bowl-shape into the substrate so that the long axis passes therethrough, the bowl shape being connected to the pair of sidewalls of the slot and defining, at least in part, a terminal region at an end of the slot.

2. The method of claim 1, wherein said act of forming at least one bowl shape comprises forming at least one bowl shape into the first surface of the substrate, and wherein the at least one bowl shape has a width at the first surface measured generally orthogonal to the long axis that is greater than a width at the first surface measured generally orthogonal to the long axis between the pair of sidewalls.

3. The method of claim 1, wherein said act of forming a slot comprises one or more of: sand drilling, laser machining, and etching.

4. The method of claim 1, wherein said act of forming at least one bowl-shape comprises at least one of laser machining and mechanically removing substrate material.

5. The method of claim 1, wherein said acts of forming occur concurrently.

6. The method of claim 1, wherein said act of forming a slot comprises forming the slot so that the two sidewalls are generally orthogonal to the first surface.

7. The method of claim 1, wherein said act of forming a slot comprises forming the slot so that the two sidewalls blend into the first surface.

Docket No. 10015382-4

8. The method of claim 1, wherein said act of forming at least one bowl shape occurs prior to said act of forming a slot.
9. (Cancelled)
10. A method comprising:
forming a fluid-feed slot between a first substrate surface and a second generally opposing substrate surface, the fluid-feed slot extending along a long axis which extends generally parallel to the first surface, and having a central region and at least one terminal region arranged along the long axis wherein the terminal region is wider at the first surface than the central region as measured generally orthogonally to the long axis; and,
blending the slot at the first surface, at least in part, to decrease stress concentrations on substrate material proximate the first surface.
11. The method of claim 10, wherein said act of forming comprises forming two terminal regions with the central region interposed therebetween.
12. The method of claim 10, wherein said act of forming comprises forming at least one terminal region which is generally elliptical when viewed from above the first surface.
13. (Canceled)
14. A method comprising:
forming a fluid-feed slot by removing substrate material between a first substrate surface and a second generally opposing substrate surface, the fluid-feed slot extending along a long axis which lies generally parallel to the first substrate surface, the fluid-feed slot having a cross-section at the first surface and taken generally parallel the first surface comprising a narrower central region positioned between two wider terminal regions; and,

Docket No. 10015382-4

rounding the slot at the first surface by removing additional substrate material, at least in part, to decrease stress concentrations on substrate material proximate the first surface.

15. The method of claim 14, wherein said act of rounding comprises contacting substrate material with a drill bit.

16. (Canceled).

17. The method of claim 18, wherein said act of forming occurs prior to said act of rounding.

18. A method comprising:
forming a slot into a substrate between a first substrate surface and a second generally opposing substrate surface wherein said act of forming a slot comprises forming a slot extending along a long axis that extends generally parallel to the first surface and having a central region and at least one terminal region arranged along the long axis, the at least one terminal region being formed at an end of the slot and having a bowl-shape; and
rounding a region where the slot intersects the first surface.

19. The method of claim 18, wherein the central region is formed interposed between two bowl-shaped terminal regions arranged generally along the long axis wherein each of the terminal regions has a width at the first surface taken generally orthogonal to the long axis that is greater than a width of the central region at the first surface taken generally orthogonal to the long axis.

20. A method comprising:
forming a central region of a slot into a semiconductor substrate the central region extending between a first substrate surface and a generally opposing second substrate surface; and,

Docket No. 10015382-4

forming two terminal regions of the slot into the first surface generally contiguous with and interposed by the central region, each of the two terminal regions having a width at the first surface taken generally orthogonal to a long axis of the slot that is greater than a width of the central region at the first surface taken generally orthogonal to the long axis of the slot.

21. The method of claim 20, wherein said act of forming two terminal regions comprises forming two terminal regions which do not extend to the second surface of the substrate.

22. The method of claim 20, wherein said act of forming two terminal regions comprises forming two terminal regions which extend through less than a majority of a thickness of the substrate as defined between the first and second surfaces.

23. The method of claim 20, wherein said act of forming two terminal regions comprises forming two terminal regions which are generally circular when viewed from above the first surface.

24. The method of claim 20, wherein said act of forming the central region comprises rounding the central region into the first surface and wherein said act of forming two terminal regions comprises rounding the two terminal regions into the first surface.

25. The method of claim 20 further comprising forming two additional terminal regions into the second surface which are contiguous with and interposed by the central region.

Docket No. 10015382-4

9. Evidence Appendix

There is no additional evidence attached.

Docket No. 10015382-4

10. Related Proceedings Appendix

There are no related proceedings.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.